PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-273010
(43)Date of publication of application : 13.10.1998

(51)Int.Cl. B60R 21/24
B60R 21/22

(21)Application number : 09-078723
(22)Date of filing : 31.03.1997

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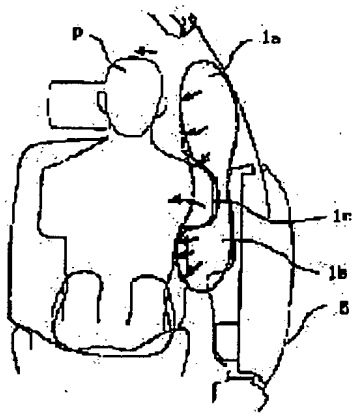
(54) AIR BAG DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To cover nearly from the head part to the waist part of an occupant with an air bag so as to protect him in the case of side collision by nearly simultaneously expanding at first an air bag part protecting nearly the head part and an air bag part protecting nearly from the breast part to the waist part, and next expanding an air bag part protecting nearly from the shoulder part to the breast part.
SOLUTION: When an occupant P is in a rough posture inclined on the inside of a door in the case of side collision and the like of a vehicle, the separated chambers 1a, 1b of an air bag begin to develope while a little expanding forward in the vehicle. Further the separated chamber 1b is developed while entering the gap between the door 6 inside and nearly the waist part - the breast part (the flank) of the occupant P, and expanded. When the occupant P is moved on the inside of the door 6 by reaction of the bag, because a gap is generated between the occupant P and the inside of the door 6, the air bag separated chambers 1a, 1b are developed forward in the vehicle while further expanding, hence a separated chamber 1c is pulled and hung so as to enter the gap between the shoulder part - the breast part of the occupant P and the inside of the door 6, and simultaneously begins to expand. Hereby the occupant P can be restrained by the air bag.



LEGAL STATUS

[Date of request for examination]	29.10.2003
[Date of sending the examiner's decision of rejection]	
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]	
[Date of final disposal for application]	
[Patent number]	3758287
[Date of registration]	13.01.2006
[Number of appeal against examiner's decision of rejection]	
[Date of requesting appeal against examiner's decision of rejection]	
[Date of extinction of right]	

* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] It is prepared in a sheet flank and a car-body flank. By impulse force detection of the cross direction In the one apparatus air bag which covers the crew abbreviation head expanded and developed - the lumbar part The air bag part which protects an abbreviation head for this one apparatus air bag, and the air bag part which protects an abbreviation shoulder - a thorax, It trichotomizes into the air bag part which protects an abbreviation thorax - the lumbar part at least in the height direction. Air bag equipment characterized by expanding the air bag part which protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part to abbreviation coincidence, and expanding the air bag part which protects an abbreviation shoulder - a thorax next.
[Claim 2] Air bag equipment characterized by preparing an air hole in the septum formed in order to divide into the air bag part which protects an abbreviation head, the air bag part which protects an abbreviation shoulder - a thorax, and the air bag part which protects an abbreviation thorax - the lumbar part in air bag equipment according to claim 1 at car front approach.
[Claim 3] Air bag equipment characterized by having prepared the air hole in the septum formed in order to divide into the air bag part which protects an abbreviation head, the air bag part which protects an abbreviation shoulder - a thorax, and the air bag part which protects an abbreviation thorax - the lumbar part in air bag equipment according to claim 1, and enlarging air hole area gradually toward the car front.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention is prepared in a sheet flank or a car-body flank, and by impulse force detection of the cross direction, it expands and develops and it relates to the air bag equipment which has an air bag for supporting crew.
[0002]
[Description of the Prior Art] As conventional air bag equipment, there is a thing as shown, for example in drawing 20 and drawing 21 (technique given in JP,6-227348,A). Drawing 20 is the left side view which looked at the car-body flank of an automobile from the in-the-car side, and drawing 21 is the explanatory view showing the expansion condition of an air bag. An air bag 1 consists of one apparatus which protects a crew head - a thorax, and an air bag 1 is divided into two, detached office 1a and detached office 1b, air bag 1b which protects an abbreviation thorax develops first, and it has the structure which air bag detached office 1a which is overdue and protects an abbreviation head develops.
[0003] Next, the conventional technique (technique given in JP,5-105023,A) shown in drawing 22 consists of one apparatus from which an air bag 1 protects a crew head - a thorax, and is carried in the side door, and has the means to which this air bag 1 is moved according to a crew seat location. Moreover, as shown in drawing 23 , also when an air bag helicopter loading site is carried in the sheet instead of a side door in the one apparatus air bag which protects the above-mentioned crew head a thorax - the lumbar part, it thinks. In addition, three in drawing is head loess TOREINTO. When it is in the condition of having equipped the air bag equipment shown in said such drawing 20 - drawing 23 and crew has sat down normally, in a car side collision as shown in drawing 24 etc. Since the time amount which serves as order of the crew lumbar part, a shoulder - a thorax, and a head first as timing in which the door inside interferes with Crew P as shown in drawing 25 , and the constraint to a thorax from the waist takes is early, It was satisfactory when having doubled the timing of air bag expansion with the restricted timing from this waist to a thorax.
[0004]
[Problem(s) to be Solved by the Invention] However, there was a problem of the timing of a crew shoulder - a thorax becoming early most as the timing to which the door inside will interfere with Crew P in a car side collision etc. if the rough posture to which Crew P inclined to the door inside a little as it was shown in drawing 26 , if it was in conventional such air bag equipment is taken shows drawing 27 , and then becoming the order of the lumbar part and a head.
[0005] As this invention was made paying attention to such a conventional trouble and shown in drawing 1 - drawing 3 The air bag part which protects an abbreviation head in the one apparatus air bag which covers an abbreviation thorax - a head, and the air bag part which protects an abbreviation shoulder - a thorax, The air bag part which divides into the air bag part which protects an abbreviation thorax - the lumbar part, and protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part It aims at solving the above-mentioned problem by expanding abbreviation coincidence first and expanding the air bag part which protects an abbreviation shoulder - a thorax next. Furthermore, it aims at solving the above-mentioned problem by moving crew from the door inside a little, building a clearance to a shoulder and the door inside, inserting in the clearance between this shoulder and the door inside the air bag part which protects an abbreviation shoulder - a thorax next, and expanding it by expanding first the air bag part which protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part to abbreviation coincidence.
[0006]
[Means for Solving the Problem] As a means for solving said purpose, with the air bag equipment of this invention claim 1 publication It is prepared in a sheet flank and a car-body flank. By impulse force detection of the cross direction In the one apparatus air bag which covers the crew abbreviation head expanded and developed - the lumbar part The air bag part which protects an abbreviation head for this one apparatus air bag, and the air bag part which protects an abbreviation shoulder - a thorax, It considered as the configuration which it trichotomizes [configuration] into the air bag part which protects an abbreviation thorax - the lumbar part at least in the height direction, expands the air bag part which protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part to abbreviation coincidence, and expands the air bag part which protects an abbreviation shoulder - a thorax next. With air bag equipment according to claim 2, it considered as the configuration which prepared the air hole in the septum formed in order to divide into the air bag part which protects an abbreviation head, the air bag part which protects an abbreviation shoulder - a thorax, and the air bag part which protects an abbreviation thorax - the lumbar part at car front approach in air bag equipment according to claim 1. With air bag equipment according to claim 3, in air bag equipment according to claim 1, the air hole was prepared in the septum formed in order to divide into the air bag part which protects an abbreviation head, the air bag part which protects an abbreviation shoulder - a thorax, and the air bag part which protects an abbreviation thorax - the lumbar part, and it considered as the configuration which enlarged air hole area gradually toward the car front.
[0007]
[Embodiment of the Invention] Hereafter, this invention is explained based on a drawing. If a configuration is explained first, drawing 1 shows the air bag equipment 101 of the gestalt 1 of operation of this invention. As shown in drawing 2 and drawing 3 , air bag equipment 101 is equipped with the inflator 7 and the air bag (bag body) 1, and is attached in seat-back 2 part. The air bag 1 equipped inside with septa 8 and 9, and divides the air bag 1 into three detached offices 1a, 1b, and 1c. It is constituted so that gas may go into these detached offices 1a and 1b directly from the both ends 7a and 7b of an inflator 7, and it has the composition that gas flows into detached office 1c from detached offices 1a and 1b through the air holes 10 and 11 prepared in septa 8 and 9. Moreover, the air holes 10 and 11 prepared in septa 8 and 9 are formed in the car front twist of this air bag 1, and in the middle of air bag expansion as shown in drawing 4 - drawing 6 , gas does not flow into detached office 1c, but detached office 1c extends it to the front, maintaining a thin configuration so that it may be lengthened and hung by expansion of detached offices 1a and 1b. And when air holes 10 and 11 begin

to appear in the place where detached offices 1a and 1b expanded to some extent, as are shown in drawing 7 and drawing 8 , and it is shown in drawing 9 - drawing 11 , gas goes into detached office 1c from these air holes 10 and 11, and detached office 1c expands.
[0008] Next, an operation is explained. If in the car side collision etc. Crew P has taken the rough posture which inclined to the door inside a little as shown in drawing 12 and drawing 13 While the detached offices 1a and 1b of an air bag 1 expand a little to the car front, it begins to develop, detached office 1b extends further, going into the clearance between the abbreviation lumbar part of the door 6 inside and Crew P - a thorax (flank), while detached office 1a goes into the clearance between the abbreviation heads of a windowpane and Crew P at abbreviation coincidence, it extends, and it expands. At this time, detached office 1c does not expand, but is lengthened and hung by detached offices 1a and 1b, and extends a little to the car front.
[0009] Next, in order that Crew P may move to the door inside a little according to bag reaction force by expansion of detached offices 1a and 1b, If it extends to the car front while the air bag detached offices 1a and 1b expand further as a clearance is made to the shoulder [of Crew P] - thorax, and door 6 inside and it is shown in drawing 14 and drawing 15 , detached office 1c will lengthen, will be hung, will enter this clearance between the shoulder [of Crew P] - thorax, and door 6 insides, and will start expansion to coincidence. Drawing 16 shows the process of the expansion at the time of bag expansion.
[0010] By the above, even the crew abbreviation head - abbreviation lumbar part can be restrained by the air bag 1. Moreover, insertion of detached office 1c can be further made easy by giving reaction force at coincidence to Crew's P shoulder - a thorax, entering this clearance between the shoulder [of Crew P] - thorax, and door 6 insides by controlling the internal pressure of air bag detached office 1c by making the area or the number of air holes 10 and 11 formed in septa 10 and 11 increase gradually toward the car front, as shown in drawing 17 .
[0011] The gestalt 2 of operation is shown. Drawing 18 has formed the gestalt 1 of operation of this invention in the car-body side center pillar. Even in this case, the same effectiveness is acquired.
[0012] The gestalt 3 of operation is shown. Drawing 19 has formed the gestalt 1 of operation of this invention in the interior of car-body side Doat. Even in this case, the same effectiveness is acquired.
[0013]
[Effect of the Invention] In the one apparatus air bag which covers an abbreviation head - the lumbar part according to this invention as explained above The air bag part which is equipped with a means to detect a collision and protects an abbreviation head, and the air bag part which protects an abbreviation shoulder - a thorax, The air bag part which trichotomizes into the air bag part which protects an abbreviation thorax - the lumbar part at least, and protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part It writes as the configuration which expands abbreviation coincidence and expands the air bag part which protects an abbreviation shoulder - a thorax next. If crew has taken the rough posture which inclined to the door inside a little in the side collision etc. While the air bag part which protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part expand a little to the car front, it begins to develop. Furthermore, the air bag part which protects an abbreviation thorax - the lumbar part extends going into the clearance between the abbreviation lumbar part of the door inside and crew - a thorax (flank), and the air bag part which protects an abbreviation head to coincidence extends going into the clearance between the abbreviation heads of a windowpane and crew, and expands. Furthermore, if the air bag part which protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part expand, since crew will move to the door inside a little according to bag reaction force, a clearance is made a shoulder - a thorax, and inside [door] crew, since the air bag part which protects an abbreviation shoulder - a thorax can extend and expand in this clearance, crew's abbreviation head - the lumbar part are covered by this air bag, and the effectiveness that it can protect is acquired. A septum forms and divides into the air bag part which protects an abbreviation head, the air bag part which protects an abbreviation shoulder - a thorax, and the air bag part which protects an abbreviation thorax - the lumbar part, and it writes as the configuration which prepared an air hole in the car front approach of this septum, and after the air bag part which protects an abbreviation head, and the air bag part which protects an abbreviation thorax - the lumbar part expand, the effectiveness that the air bag part which protects an abbreviation shoulder - a thorax can expand is acquired. The effectiveness that insertion of the air bag part which protects an abbreviation shoulder - a thorax further can be made easy is acquired by giving reaction force at coincidence to crew's shoulder - a thorax, entering this clearance between crew's shoulder - a thorax, and the door inside by writing as the configuration to which the area or the number of air holes formed in the septum is made to increase gradually toward the car front, and controlling the internal pressure of the air bag part which protects an abbreviation shoulder - a thorax.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing showing the air bag equipment concerning the gestalt 1 of operation of this invention.
[Drawing 2] It is the front view of the air bag concerning the gestalt 1 of operation of this invention.
[Drawing 3] It is the side elevation of the air bag concerning the gestalt 1 of operation of this invention.
[Drawing 4] It is the front view showing the expansion middle of the air bag concerning the gestalt 1 of operation of this invention.
[Drawing 5] It is the side elevation showing the expansion middle of the air bag concerning the gestalt 1 of operation of this invention.

[Drawing 6] It is the perspective view showing the expansion middle of the air bag concerning the gestalt 1 of operation of this invention.
[Drawing 7] It is the front view showing the expansion middle of the air bag concerning the gestalt 1 of operation of this invention.
[Drawing 8] It is the side elevation showing the expansion middle of the air bag concerning the gestalt 1 of operation of this invention.

[Drawing 9] It is the front view showing the condition that the air bag concerning the gestalt 1 of operation of this invention opened.
[Drawing 10] It is the perspective view showing the condition that the air bag concerning the gestalt 1 of operation of this invention opened.
[Drawing 11] It is the perspective view showing the condition that the air bag concerning the gestalt 1 of operation of this invention opened.
[Drawing 12] It is the side elevation showing the expansion condition of the air bag in the case of having taken the rough condition that crew inclined to the door inside a little concerning the gestalt 1 of operation of this invention.
[Drawing 13] It is the front view showing the expansion condition of the air bag in the case of having taken the rough condition that crew inclined to the door inside a little concerning the gestalt 1 of operation of this invention.
[Drawing 14] It is the side elevation showing the expansion condition of the air bag in the case of having taken the rough condition that crew inclined to the door inside a little concerning the gestalt 1 of operation of this invention.
[Drawing 15] It is the front view showing the expansion condition of the air bag in the case of having taken the rough condition that crew inclined to the door inside a little concerning the gestalt 1 of operation of this invention.
[Drawing 16] It is the side elevation showing the expansion process of the air bag in the case of having taken the rough condition that crew inclined to the door inside a little concerning the gestalt 1 of operation of this invention.
[Drawing 17] It is the operation Fig. of the air bag equipment concerning the gestalt 1 of operation of this invention.
[Drawing 18] It is the side elevation showing the anchoring condition of the air bag equipment concerning the gestalt 2 of operation of this invention.
[Drawing 19] It is the side elevation showing the anchoring condition of the air bag equipment concerning the gestalt 3 of operation of this invention.
[Drawing 20] It is the left side view which looked at the car-body flank of the air bag equipment concerning the conventional example from the outside.
[Drawing 21] It is the explanatory view showing the expansion condition of the air bag equipment concerning the conventional example.
[Drawing 22] It is the explanatory view showing the air bag equipment concerning the conventional example.
[Drawing 23] It is an explanatory view at the time of carrying the air bag equipment concerning the conventional example in a sheet.
[Drawing 24] It is the explanatory view showing the time of the side collision in the air bag equipment concerning the conventional example.
[Drawing 25] It is the explanatory view showing the timing in which the door inside interferes with crew at the time of the car side collision in the air bag equipment concerning the conventional example.
[Drawing 26] It is the explanatory view showing the time of the side collision in the air bag equipment concerning the conventional example.
[Drawing 27] It is the explanatory view showing the timing in which the door inside interferes with crew at the time of the car side collision in the air bag equipment concerning the conventional example.
[Description of Notations]
1 Air Bag
1a Detached office
1b Detached office
1C Detached office
2 Seat Back
3 Head Loess TOREINTO
6 Door
7 Inflator
8 Septum
9 Septum
10 Air Hole
11 Air Hole
101 Air Bag Equipment

[Translation done.]

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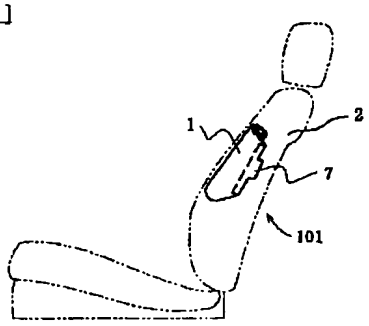
DRAWINGS

[Drawing 1]



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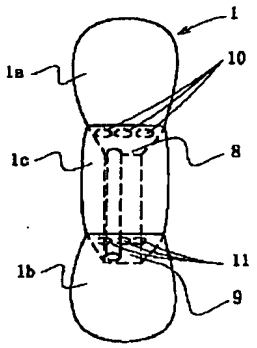

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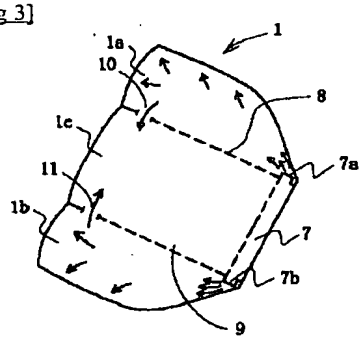

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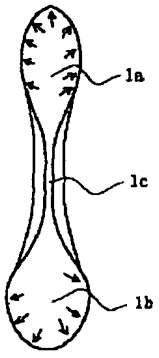

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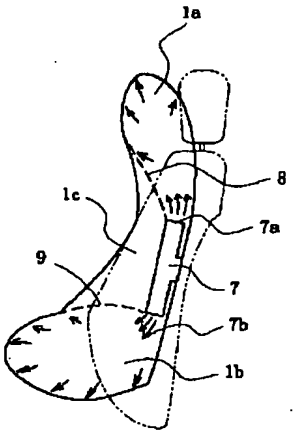

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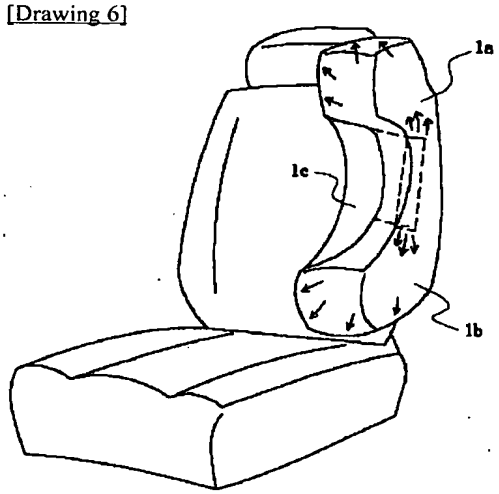

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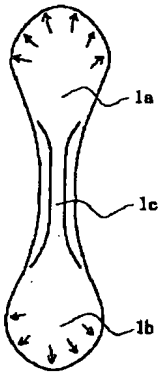

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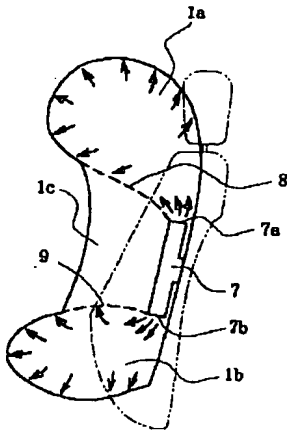

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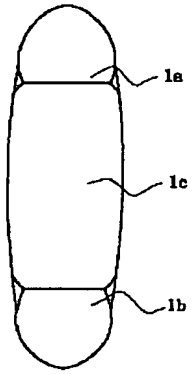

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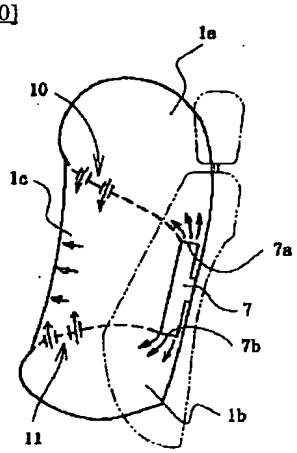

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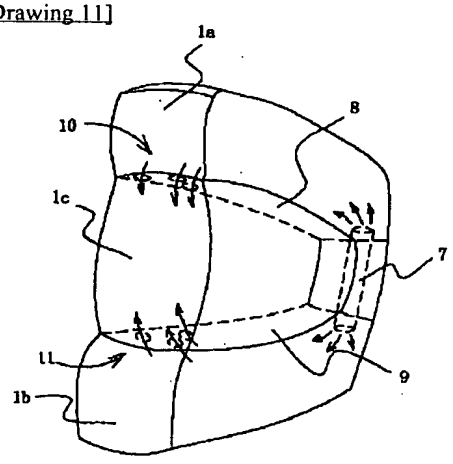

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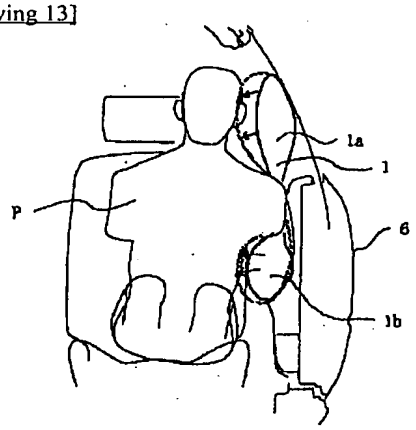

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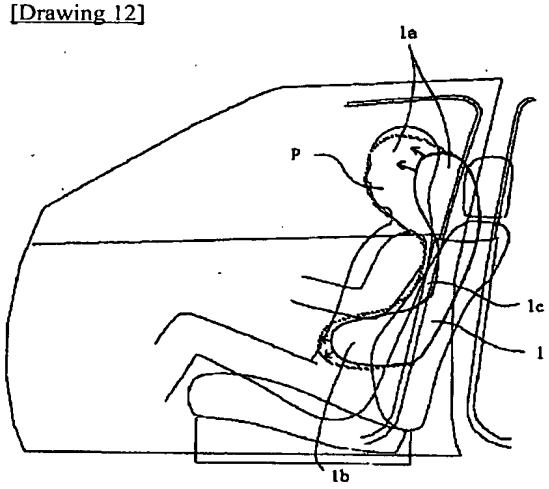

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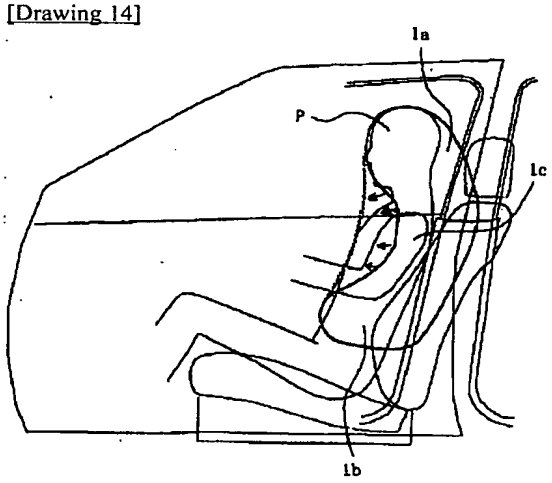

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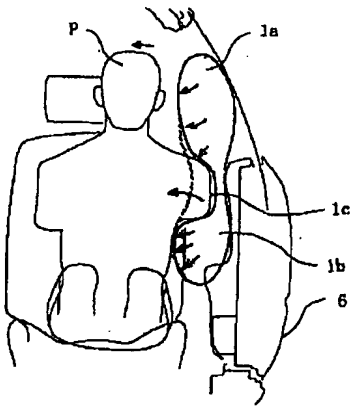

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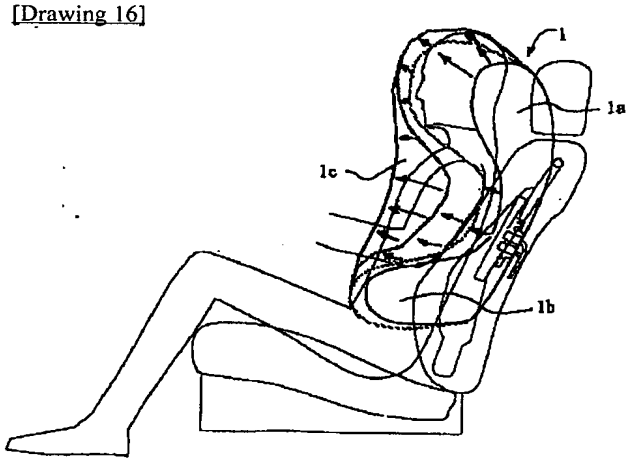

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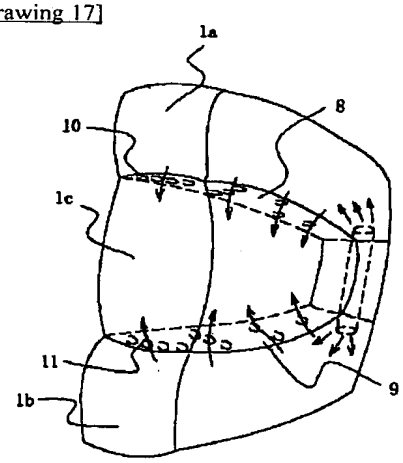

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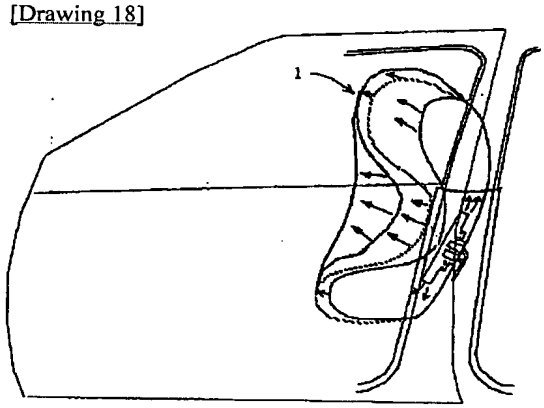

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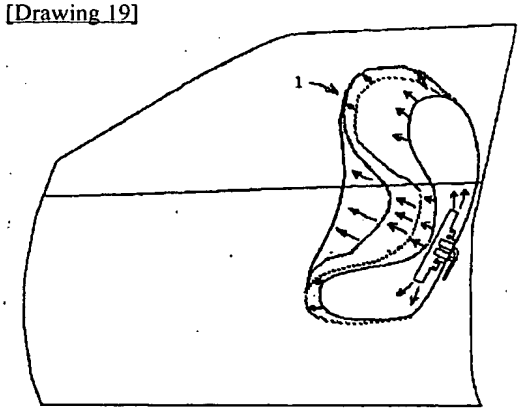

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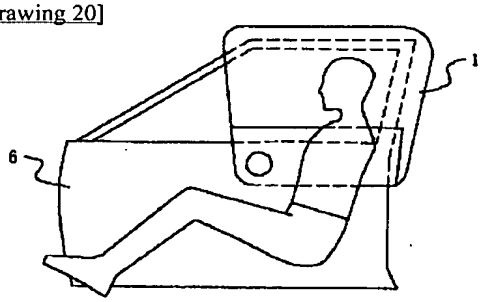

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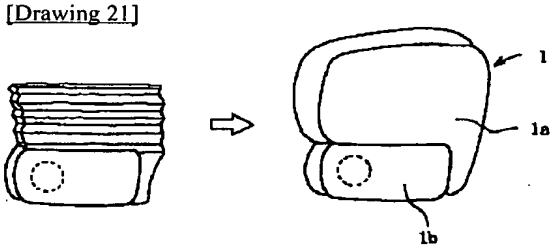

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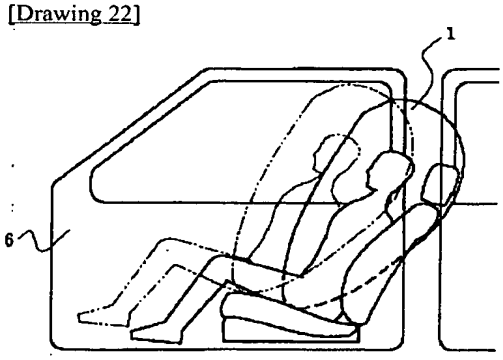

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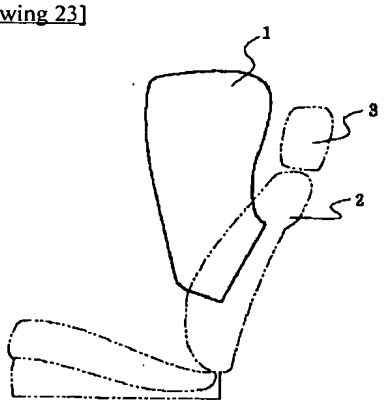
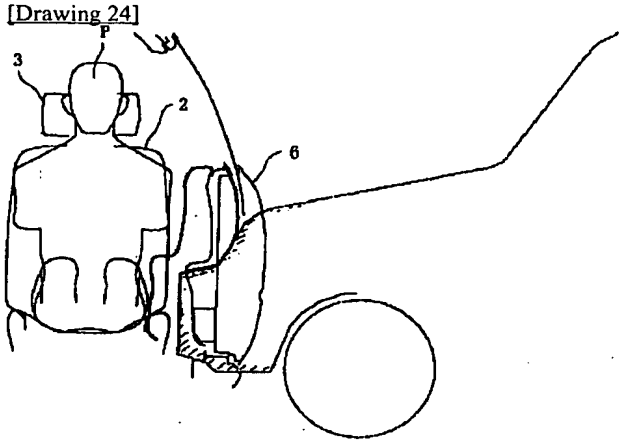
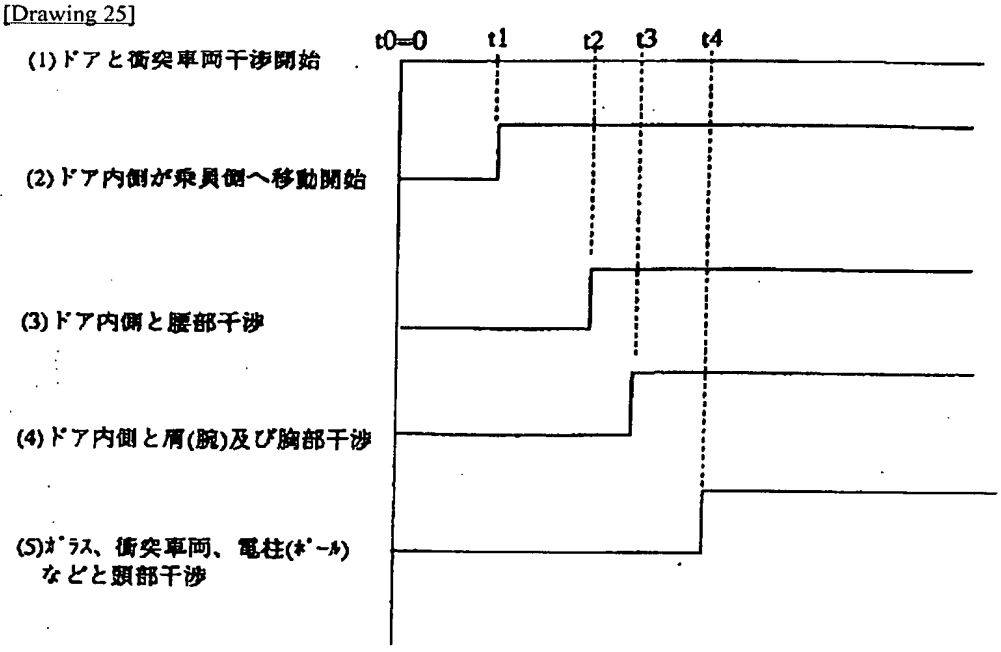


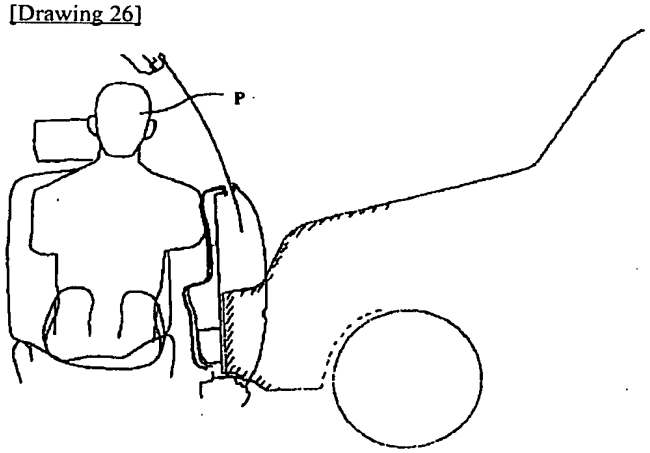
[Drawing 24]



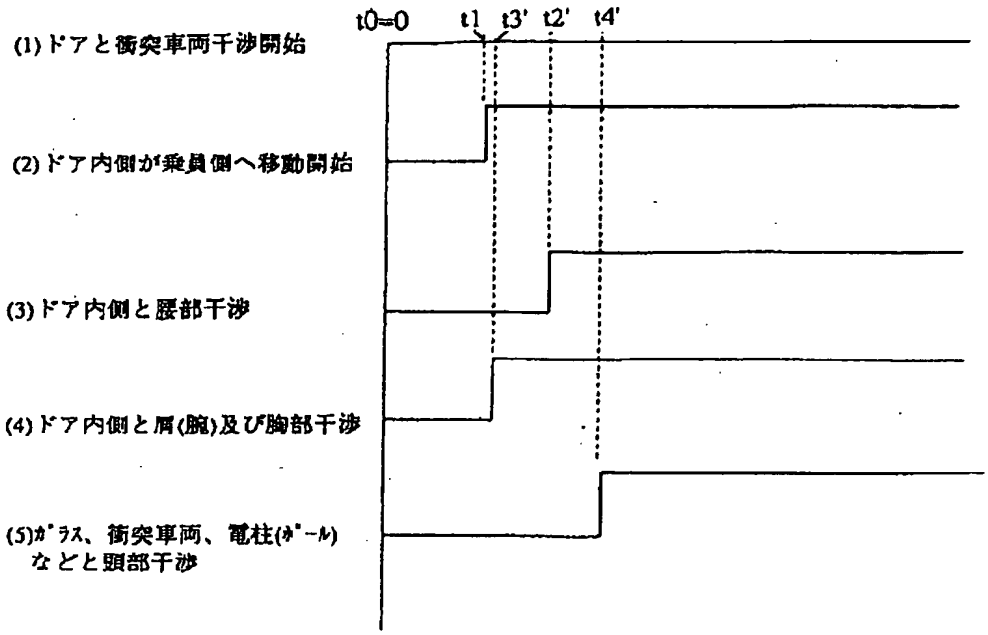
[Drawing 25]



[Drawing 26]



[Drawing 27]



[Translation done.]

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号

特開平10－273010

(43)公開日　平成10年(1998)10月13日

(51)Int.Cl.[6]	識別記号	ＦＩ
Ｂ６０Ｒ　21/24		Ｂ６０Ｒ　21/24
21/22		21/22

審査請求　未請求　請求項の数３　ＯＬ　（全９頁）

(21)出願番号　特願平9－78723

(22)出願日　平成９年(1997)３月31日

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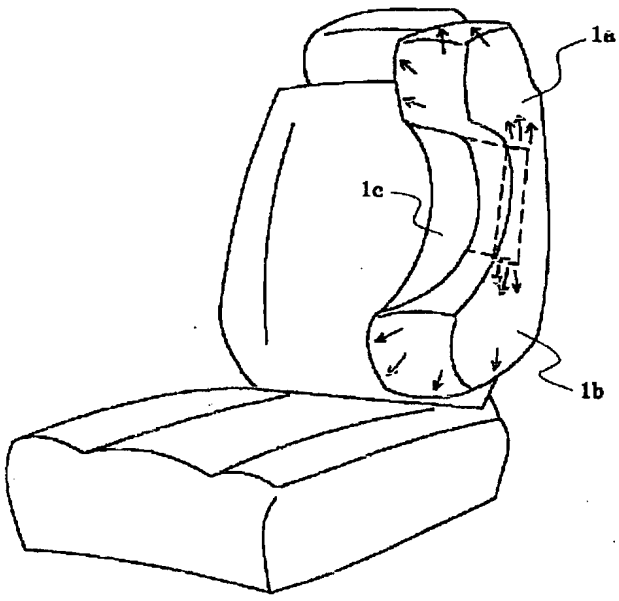
(54)【発明の名称】　エアバッグ装置

(57)【要約】

【課題】　車幅方向の衝撃から乗員の略頭部～腰部を保護することのできるエアバッグ装置を提供する。

【解決手段】　シート側部及び車体側部に設けられて、車幅方向の衝撃力検知により、膨張、展開する乗員略頭部～腰部をカバーする一体型エアバッグにおいて、該一体型エアバッグを略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に高さ方向に少なくとも３分割し、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分を、略同時に膨張させ、次に略肩部～胸部を保護するエアバッグ部分を膨張させる構成。



【特許請求の範囲】
【請求項１】　シート側部及び車体側部に設けられて、車幅方向の衝撃力検知により、膨張、展開する乗員略頭部～腰部をカバーする一体型エアバッグにおいて、該一体型エアバッグを略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に高さ方向に少なくとも３分割し、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分を、略同時に膨張させ、次に略肩部～胸部を保護するエアバッグ部分を膨張させることを特徴とするエアバッグ装置。
【請求項２】　請求項１記載のエアバッグ装置において、略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に分割するために設けた隔壁に、車両前方寄りに通気孔を設けたことを特徴とするエアバッグ装置。
【請求項３】　請求項１記載のエアバッグ装置において、略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に分割するために設けた隔壁に通気孔を設け、車両前方に向かって徐々に通気孔面積を大きくしたことを特徴とするエアバッグ装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】　この発明はシート側部あるいは車体側部に設けられて、車幅方向の衝撃力検知により、膨張、展開し、乗員を支持するためのエアバッグを有するエアバッグ装置に関する。
【０００２】
【従来の技術】　従来のエアバッグ装置としては、例えば図２０、図２１（特開平６－２２７３４８号公報記載の技術）に示すようなものがある。図２０は自動車の車体側部を車内側から見た左側面図であり、図２１はエアバッグの膨張状態を示す説明図である。エアバッグ１は乗員頭部～胸部を保護する一体型で構成され、エアバッグ１は分室１ａと分室１ｂの二つに分けられ、略胸部を保護するエアバッグ１ｂが最初に展開し、遅れて略頭部を保護するエアバッグ分室１ａが展開する構造を有している。
【０００３】次に、図２２に示す従来技術（特開平５－１０５０２３号公報記載の技術）は、エアバッグ１が乗員頭部～胸部を保護する一体型で構成され、且つサイドドアに搭載されており、乗員座席位置に合わせて、該エアバッグ１を移動させる手段を有する。また、図２３に示すように、上記乗員頭部～胸部～腰部を保護する一体型エアバッグにおいて、エアバッグ搭載位置を、サイドドアではなく、シートに搭載した場合も考えられる。
尚、図中３はヘッドレストレイントである。このような前記図２０～図２３に示すエアバッグ装置を装備している状態で、且つ乗員が正常に着座している場合、図２４に示すような車両側面衝突等の場合は、ドア内側が乗員Ｐと干渉するタイミングとして、図２５に示すようにまず、乗員腰部、肩～胸部、それから頭部の順となり、腰から胸部への拘束に要する時間が早いため、該腰から胸部への拘束タイミングにエアバッグ展開のタイミングを合わせていれば、問題が無かった。
【０００４】
【発明が解決しようとする課題】　しかしながら、このような従来のエアバッグ装置にあっては、図２６に示すように、乗員Ｐがややドア内側に傾いたラフな姿勢をとっていると、車両側面衝突等の場合は、ドア内側が乗員Ｐと干渉するタイミングが図２７に示すように、乗員肩～胸部のタイミングが最も早くなり、次に腰部、頭部の順となるという問題があった。
【０００５】この発明は、このような従来の問題点に着目してなされたもので、図１～図３に示すように、略胸部～頭部をカバーする一体型エアバッグにおいて、略頭部を保護するエアバッグ部分、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に分割し、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分を、最初に略同時に膨張させ、次に略肩部～胸部を保護するエアバッグ部分を膨張させることにより、上記問題を解決することを目的としている。更に、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分を、最初に略同時に膨張させることにより、乗員をややドア内側から移動させて、肩部とドア内側に隙間をつくり、次に略肩部～胸部を保護するエアバッグ部分を該肩部とドア内側の隙間に挿入し、膨張させることにより、上記問題を解決することを目的としている。
【０００６】
【課題を解決するための手段】　前記目的を解決するための手段として本発明請求項１記載のエアバッグ装置では、シート側部及び車体側部に設けられて、車幅方向の衝撃力検知により、膨張、展開する乗員略頭部～腰部をカバーする一体型エアバッグにおいて、該一体型エアバッグを略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に高さ方向に少なくとも３分割し、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分を、略同時に膨張させ、次に略肩部～胸部を保護するエアバッグ部分を膨張させる構成とした。請求項２記載のエアバッグ装置では、請求項１記載のエアバッグ装置において、略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に分割するために設けた隔壁に、車両前方寄りに通気孔を設けた構成とした。請求項３記載のエアバッグ装置では、請求項１記載のエアバッグ装置において、略頭部を保護するエアバ

ッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に分割するために設けた隔壁に通気孔を設け、車両前方に向かって徐々に通気孔面積を大きくした構成とした。

【０００７】

【発明の実施の形態】　以下、この発明を図面に基づいて説明する。まず構成を説明すると、図１は本発明の実施の形態１のエアバッグ装置１０１を示している。エアバッグ装置１０１は、図２、図３に示すように、インフレータ７とエアバッグ（袋体）１を備えており、シートバック２部分に取り付けられている。エアバッグ１は中に隔壁８及び９を備え、エアバッグ１を３つの分室１ａ、１ｂ、１ｃに分けている。該分室１ａ及び１ｂにはインフレータ７の両端７ａ及び７ｂからガスが直接入るように構成されており、分室１ｃには分室１ａ及び１ｂから、隔壁８及び９に設けられた通気孔１０及び１１を通してガスが流入する構成となっている。また、隔壁８及び９に設けられた通気孔１０及び１１は該エアバッグ１の車両前方よりに設けられ、図４～図６に示すようなエアバッグ展開途中では分室１ｃにはガスが流入せず、分室１ｃは分室１ａ及び１ｂの展開に引き吊られるように、細い形状を保ちつつ前方へ伸展する。そして図７、図８に示すように分室１ａ、１ｂがある程度膨張したところで、通気孔１０、１１が現れ始めると、図９～図１１に示すように該通気孔１０及び１１からガスが分室１ｃに入り、分室１ｃは膨張する。

【０００８】次に作用を説明する。車両側面衝突等の場合、図１２、図１３に示すように、乗員Ｐがややドア内側に傾いたラフな姿勢をとっていると、エアバッグ１の分室１ａと１ｂが車両前方へやや膨張しながら展開し始め、更に分室１ｂはドア６内側と乗員Ｐの略腰部～胸部（脇腹）の隙間に入りながら伸展し、略同時に分室１ａは窓ガラスと乗員Ｐの略頭部の隙間に入りながら伸展し、膨張する。このとき分室１ｃは膨張せず、分室１ａと１ｂに引き吊られて、車両前方へやや伸展する。

【０００９】次に、分室１ａと１ｂの膨張により、乗員Ｐはバッグ反力によってややドア内側へ移動するため、乗員Ｐの肩部～胸部とドア６内側に隙間ができ、図１４、図１５に示すように、エアバッグ分室１ａと１ｂが更に膨張しながら、車両前方へ伸展すると、分室１ｃが引き吊られて、乗員Ｐの肩部～胸部とドア６内側の該隙間に入り込み、同時に膨張を開始する。図１６はバッグ展開時の膨張の過程を示している。

【００１０】以上により、乗員略頭部～略腰部までをエアバッグ１により拘束できる。また、図１７に示すように、隔壁１０及び１１に設けた通気孔１０及び１１の面積あるいは数を車両前方へ向かって徐々に増加させることにより、エアバッグ分室１ｃの内圧をコントロールすることにより、乗員Ｐの肩部～胸部とドア６内側の該隙間に入り込みながら、同時に乗員Ｐの肩部～胸部とに反力を与えることにより、更に分室１ｃの挿入を容易にすることができる。

【００１１】実施の形態２を示す。図１８は本発明の実施の形態１を車体側センタピラーに設けている。この場合でも同様の効果が得られる。

【００１２】実施の形態３を示す。図１９は本発明の実施の形態１を車体側ドア内部に設けている。この場合でも同様の効果が得られる。

【００１３】

【発明の効果】　以上説明してきたように、この発明によれば、略頭部～腰部をカバーする一体型エアバッグにおいて、衝突を検知する手段を備え、略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に少なくとも３分割し、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分を、略同時に膨張させ、次に略肩部～胸部を保護するエアバッグ部分を膨張させる構成としたため、側面衝突などの場合、乗員がややドア内側に傾いたラフな姿勢をとっていると、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分が車両前方へやや膨張しながら展開し始め、更に略胸部～腰部を保護するエアバッグ部分はドア内側と乗員の略腰部～胸部（脇腹）の隙間に入りながら伸展し、同時に略頭部を保護するエアバッグ部分は窓ガラスと乗員の略頭部の隙間に入りながら伸展し、膨張する。更に略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分が膨張すると、バッグ反力によって乗員がややドア内側へ移動するため、乗員の肩部～胸部とドア内側に隙間ができ、略肩部～胸部を保護するエアバッグ部分が該隙間に伸展且つ膨張できるため、乗員の略頭部～腰部を該エアバッグでカバーし、保護できるという効果が得られる。略頭部を保護するエアバッグ部分と、略肩部～胸部を保護するエアバッグ部分と、略胸部～腰部を保護するエアバッグ部分に隔壁を設けて分割し、該隔壁の車両前方寄りに通気孔を設けた構成としたため、略頭部を保護するエアバッグ部分と略胸部～腰部を保護するエアバッグ部分が膨張した後に、略肩部～胸部を保護するエアバッグ部分が膨張できるという効果が得られる。隔壁に設けた通気孔の面積あるいは数を車両前方へ向かって徐々に増加させる構成としたため、略肩部～胸部を保護するエアバッグ部分の内圧をコントロールすることにより、乗員の肩部～胸部とドア内側の該隙間に入り込みながら、同時に乗員の肩部～胸部とに反力を与えることにより、更に略肩部～胸部を保護するエアバッグ部分の挿入を容易にできるという効果が得られる。

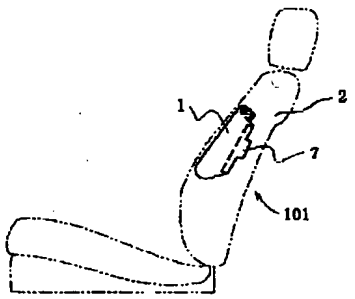
【図面の簡単な説明】

【図１】　本発明の実施の形態１にかかるエアバッグ装置を示す図である。

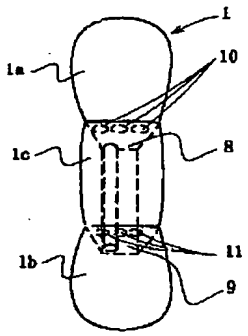
【図２】　本発明の実施の形態１にかかるエアバッグの

正面図である。
【図３】　本発明の実施の形態１にかかるエアバッグの側面図である。
【図４】　本発明の実施の形態１にかかるエアバッグの展開途中を示す正面図である。
【図５】　本発明の実施の形態１にかかるエアバッグの展開途中を示す側面図である。
【図６】　本発明の実施の形態１にかかるエアバッグの展開途中を示す斜視図である。
【図７】　本発明の実施の形態１にかかるエアバッグの展開途中を示す正面図である。
【図８】　本発明の実施の形態１にかかるエアバッグの展開途中を示す側面図である。
【図９】　本発明の実施の形態１にかかるエアバッグが開いた状態を示す正面図である。
【図１０】　本発明の実施の形態１にかかるエアバッグが開いた状態を示す斜視図である。
【図１１】　本発明の実施の形態１にかかるエアバッグが開いた状態を示す斜視図である。
【図１２】　本発明の実施の形態１にかかる、乗員がややドア内側に傾いたラフな状態をとっている場合のエアバッグの展開状態を示す側面図である。
【図１３】　本発明の実施の形態１にかかる、乗員がややドア内側に傾いたラフな状態をとっている場合のエアバッグの展開状態を示す正面図である。
【図１４】　本発明の実施の形態１にかかる、乗員がややドア内側に傾いたラフな状態をとっている場合のエアバッグの展開状態を示す側面図である。
【図１５】　本発明の実施の形態１にかかる、乗員がややドア内側に傾いたラフな状態をとっている場合のエアバッグの展開状態を示す正面図である。
【図１６】　本発明の実施の形態１にかかる、乗員がややドア内側に傾いたラフな状態をとっている場合のエアバッグの膨張過程を示す側面図である。
【図１７】　本発明の実施の形態１にかかるエアバッグ装置の作用図である。
【図１８】　本発明の実施の形態２にかかるエアバッグ装置の取付け状態を示す側面図である。
【図１９】　本発明の実施の形態３にかかるエアバッグ装置の取付け状態を示す側面図である。
【図２０】　従来例にかかるエアバッグ装置の車体側部を外側から見た左側面図である。
【図２１】　従来例にかかるエアバッグ装置の展開状態を示す説明図である。
【図２２】　従来例にかかるエアバッグ装置を示す説明図である。
【図２３】　従来例にかかるエアバッグ装置をシートに搭載した場合の説明図である。
【図２４】　従来例にかかるエアバッグ装置における側面衝突時を示す説明図である。
【図２５】　従来例にかかるエアバッグ装置における車両側面衝突時にドア内側が乗員と干渉するタイミングを示す説明図である。
【図２６】　従来例にかかるエアバッグ装置における側面衝突時を示す説明図である。
【図２７】　従来例にかかるエアバッグ装置における車両側面衝突時にドア内側が乗員と干渉するタイミングを示す説明図である。
【符号の説明】
１　エアバッグ
１ａ　分室
１ｂ　分室
１Ｃ　分室
２　シートバック
３　ヘッドレストレイント
６　ドア
７　インフレータ
８　隔壁
９　隔壁
１０　通気孔
１１　通気孔
１０１　エアバッグ装置

【図１】



【図２】



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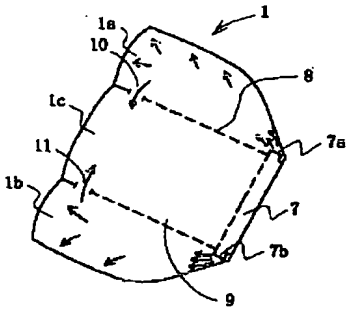

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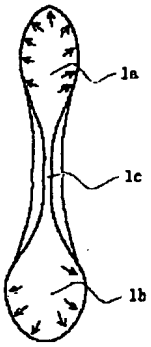

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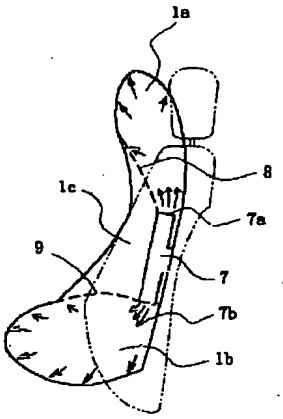

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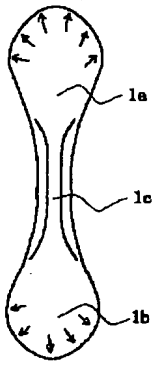

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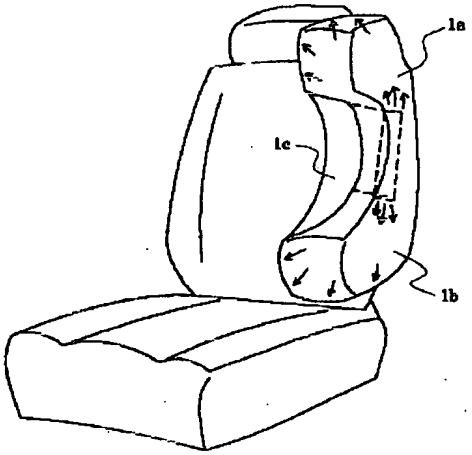

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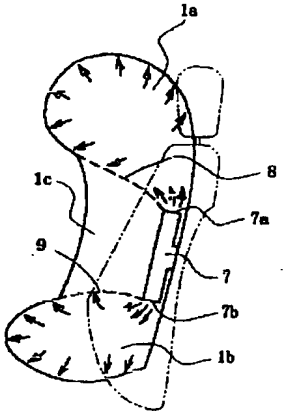

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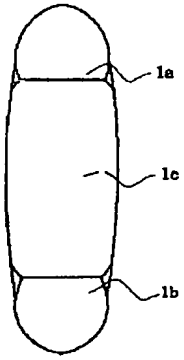

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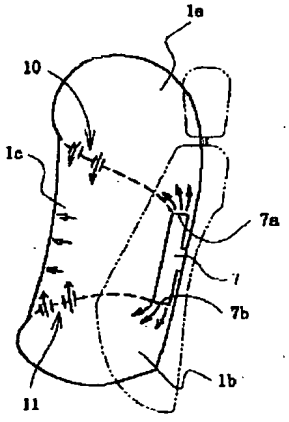

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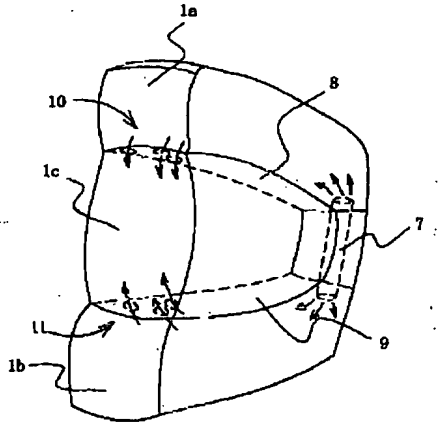

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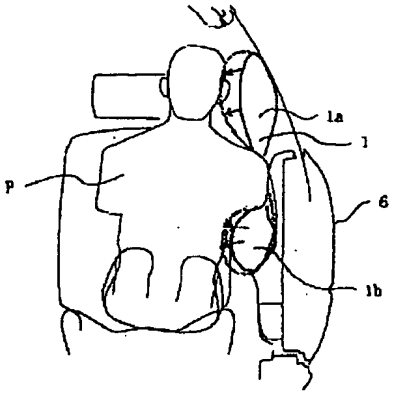

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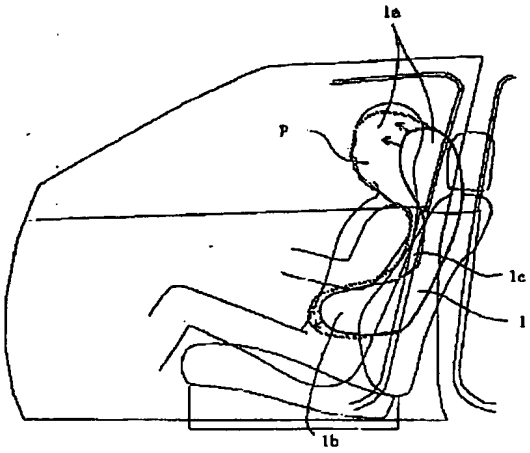

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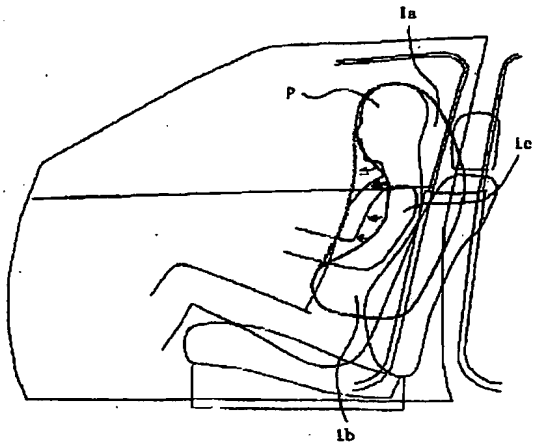

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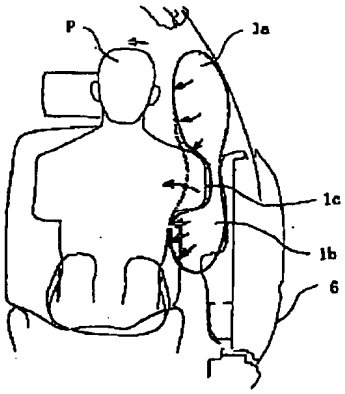

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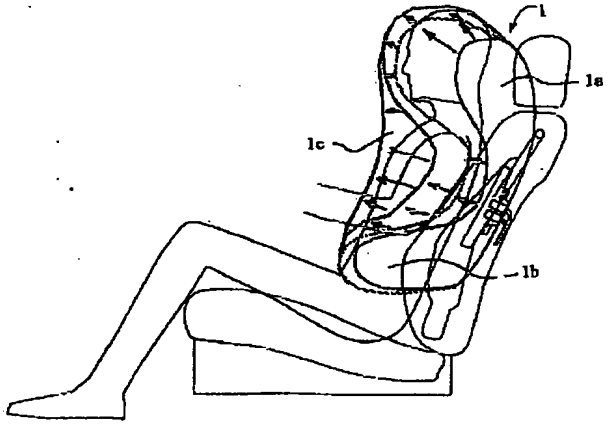

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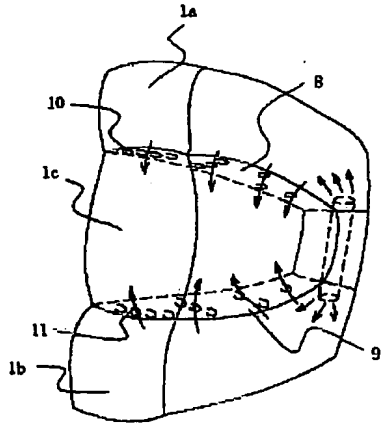

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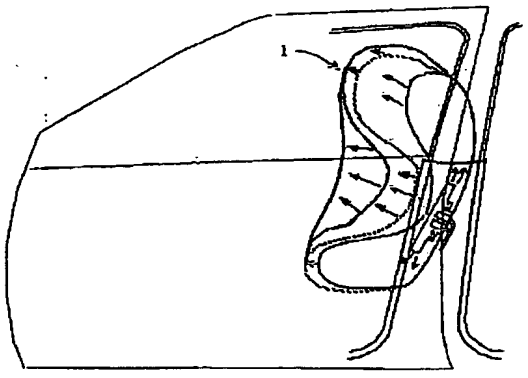
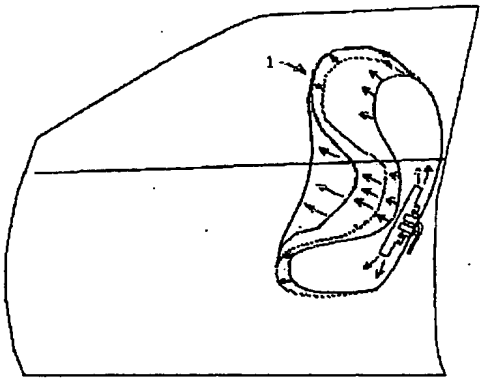
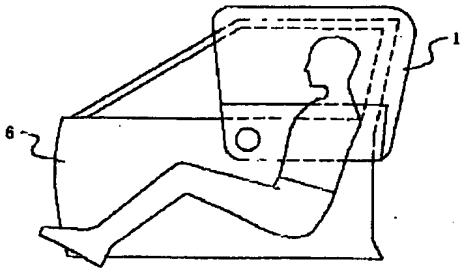


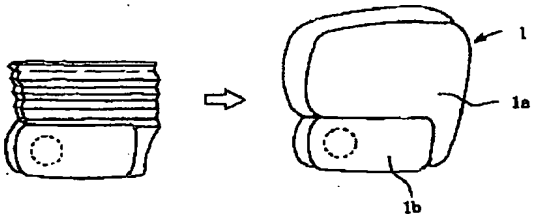
【図１９】



【図２０】



【図２１】



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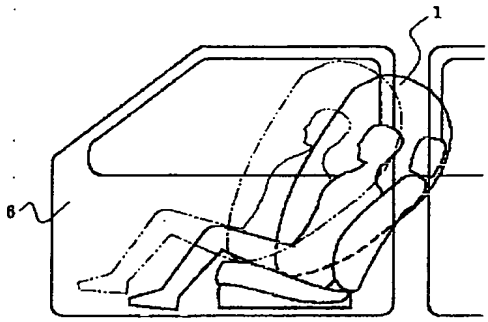

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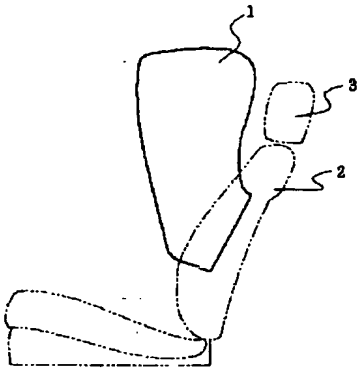

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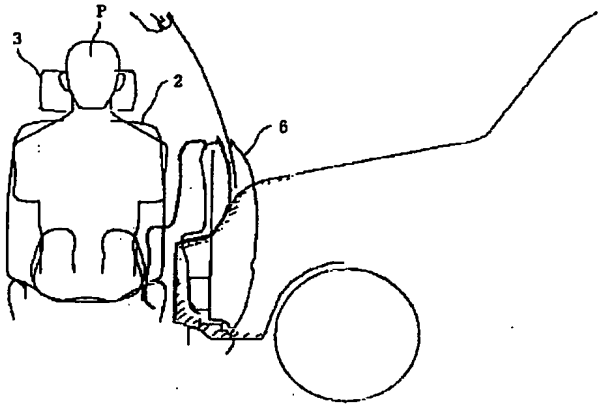

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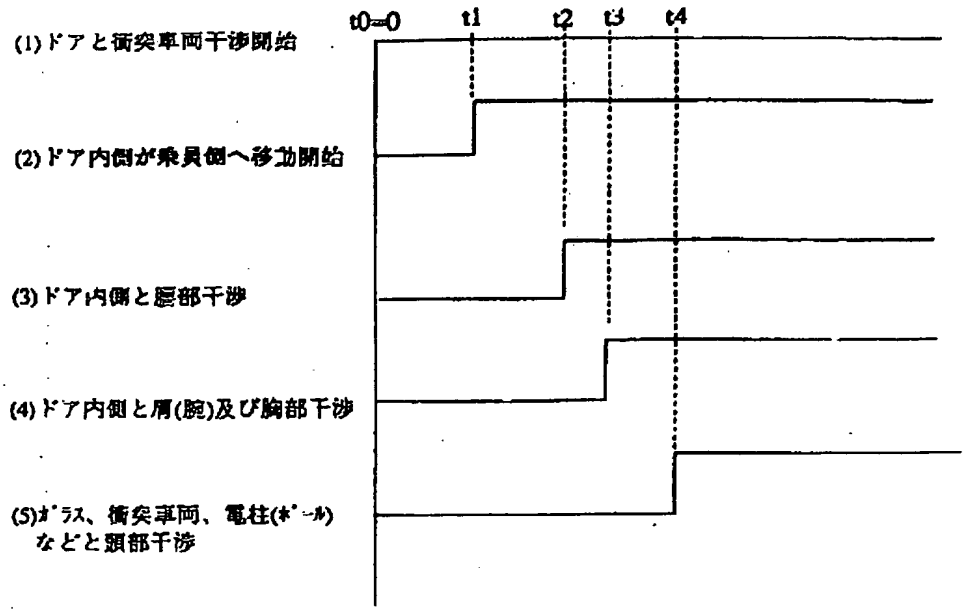
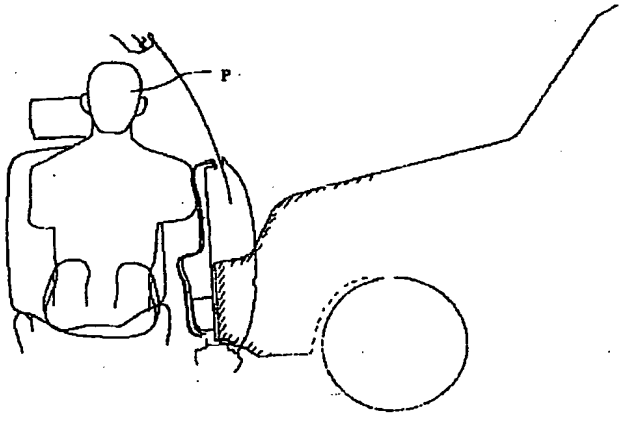

t0=0
t1
t2
t3
t4
(1)ドアと衝突車両干渉開始
(2)ドア内側が乗員側へ移動開始
(3)ドア内側と腰部干渉
(4)ドア内側と肩(腕)及び胸部干渉
(5)ｶﾞﾗｽ、衝突車両、電柱(ﾎﾟｰﾙ)
などと頭部干渉

【図２６】


P

【図27】